

just a few definitions...

Aquifer: a (porous or fractured) water-bearing formation capable of yielding exploitable quantities of water

Aquitard: retards but does not prevent flow of water

Aquiclude: porous, but very low transmissivity

Aquifuge: no effective porosity (usually applied to engineered barriers)

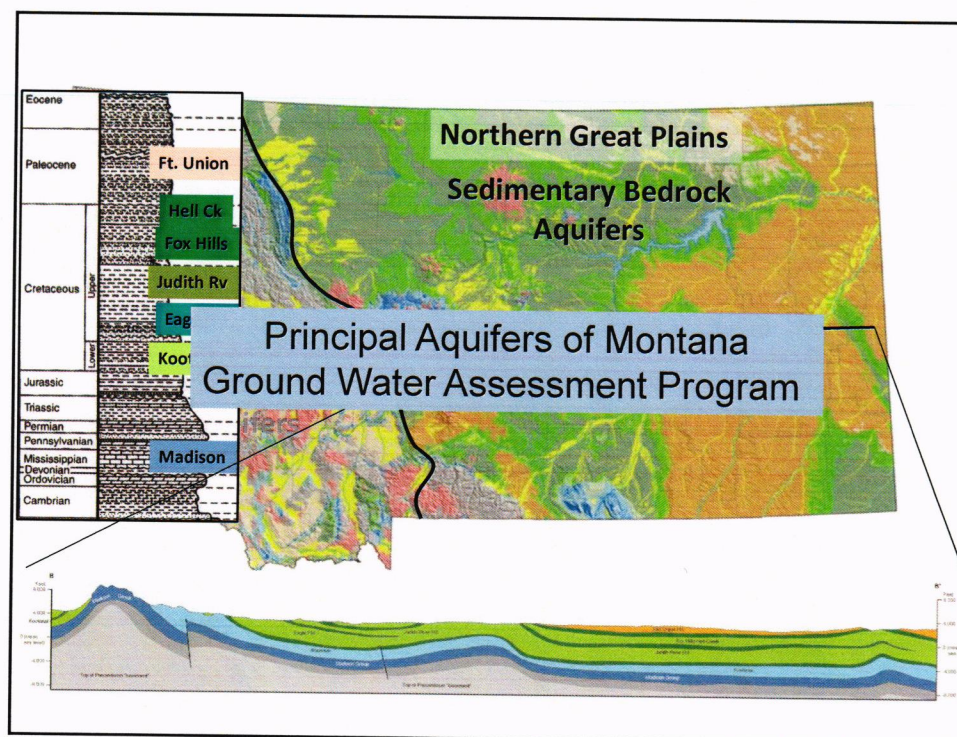
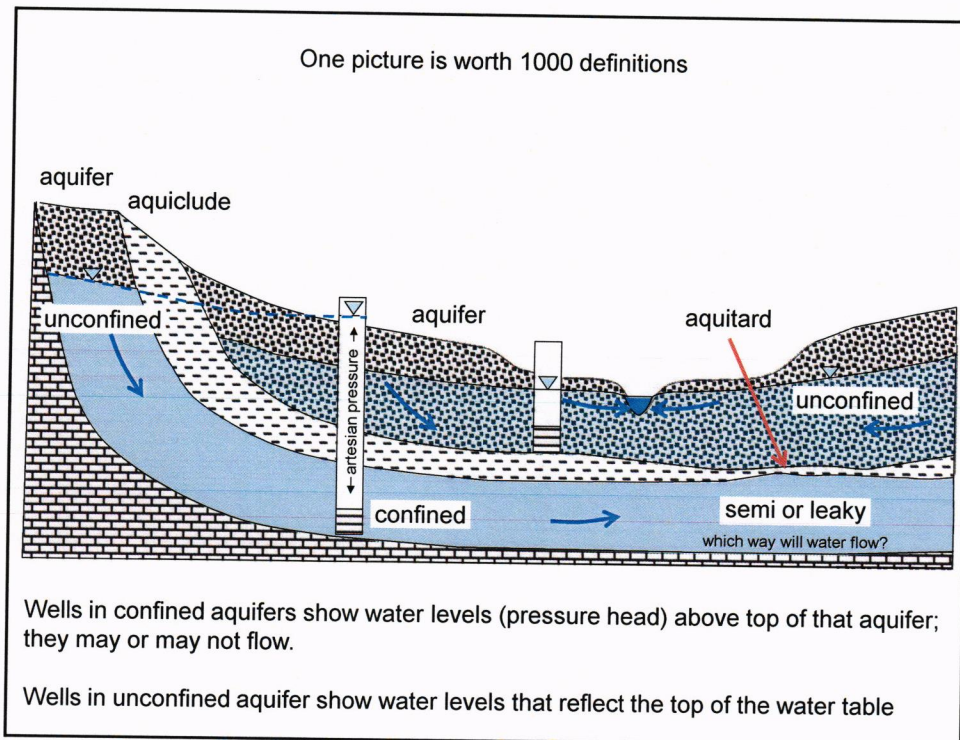
Unconfined

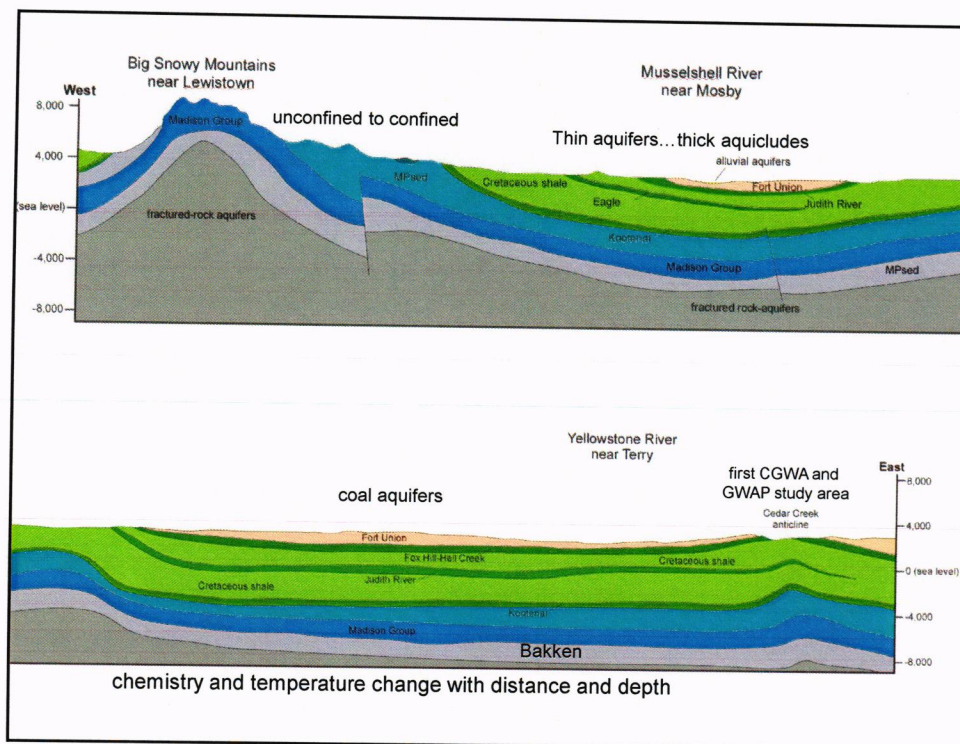
Locally confined

Semi unconfined

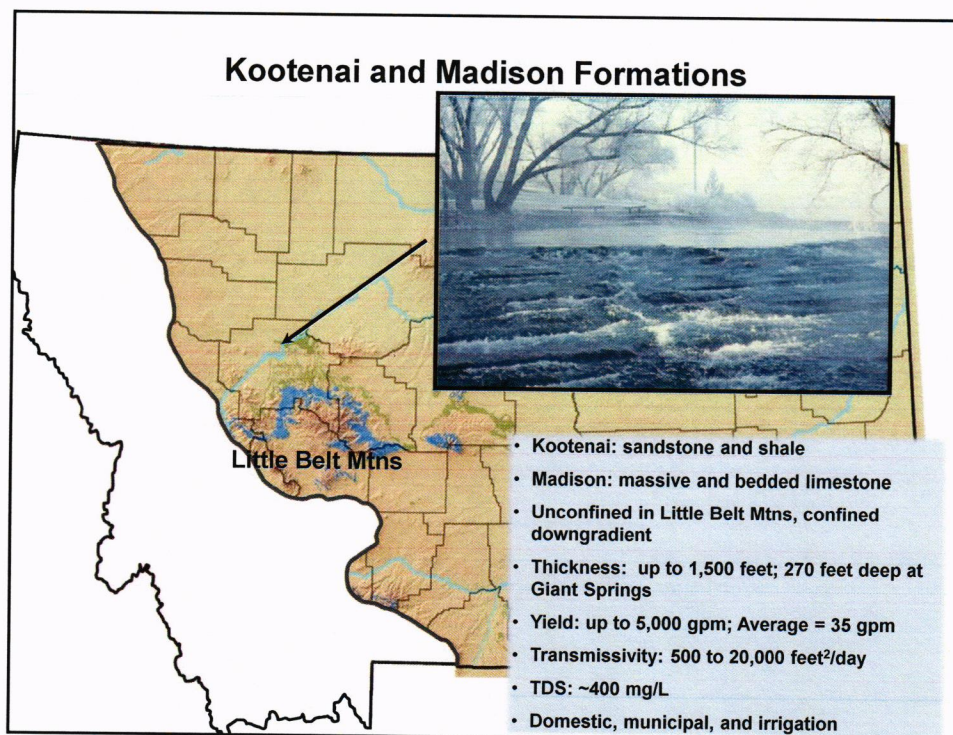
Semi confined (leaky confined)

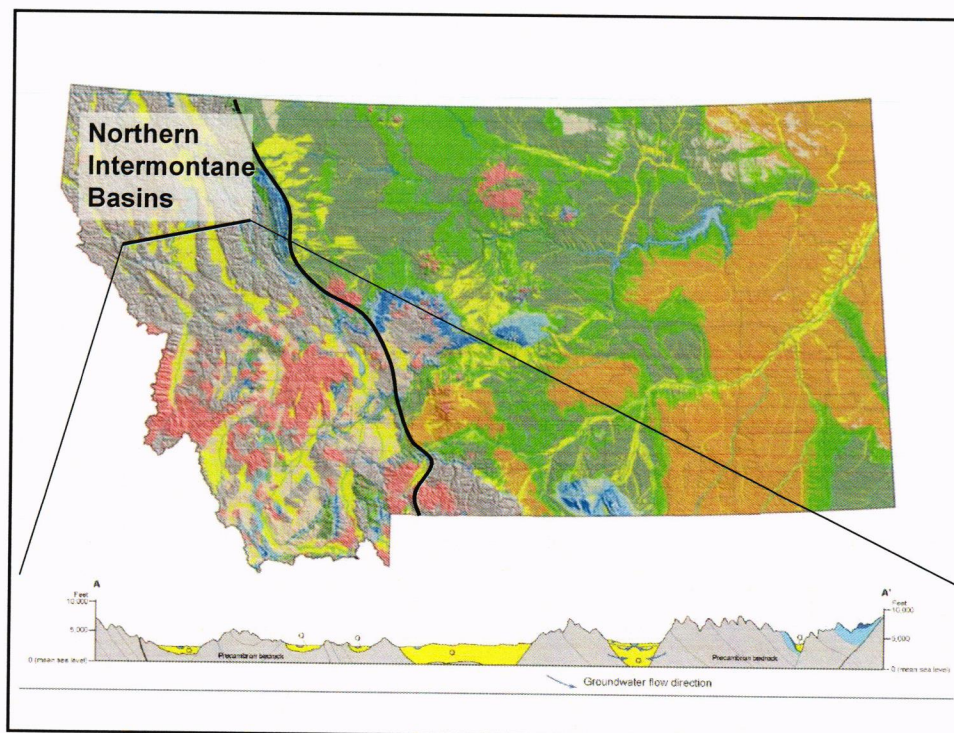
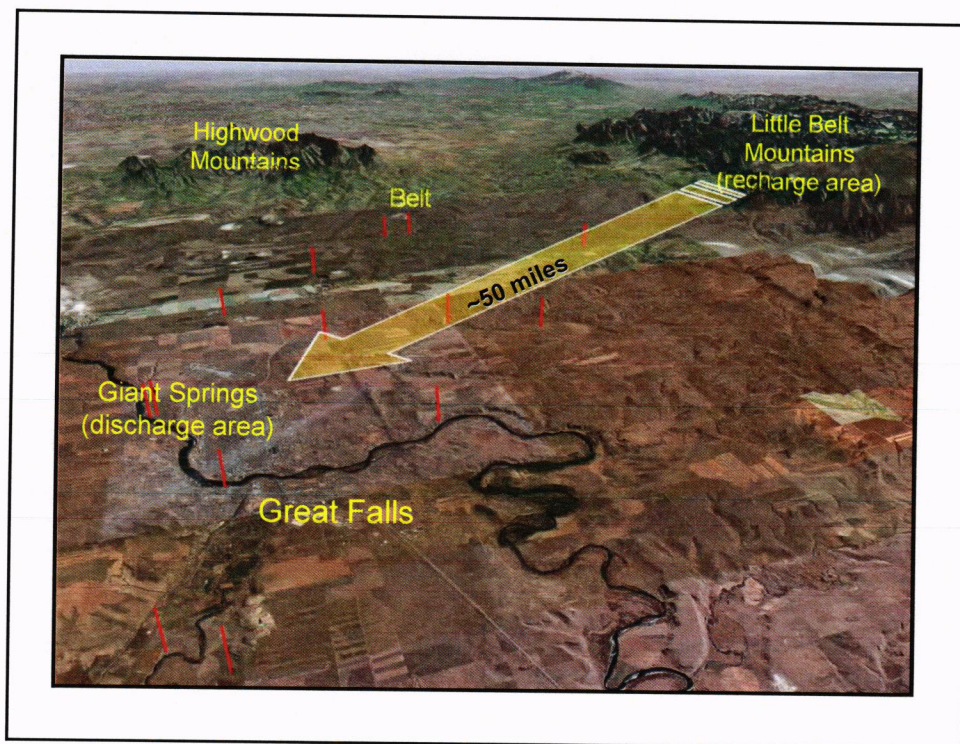
Confined

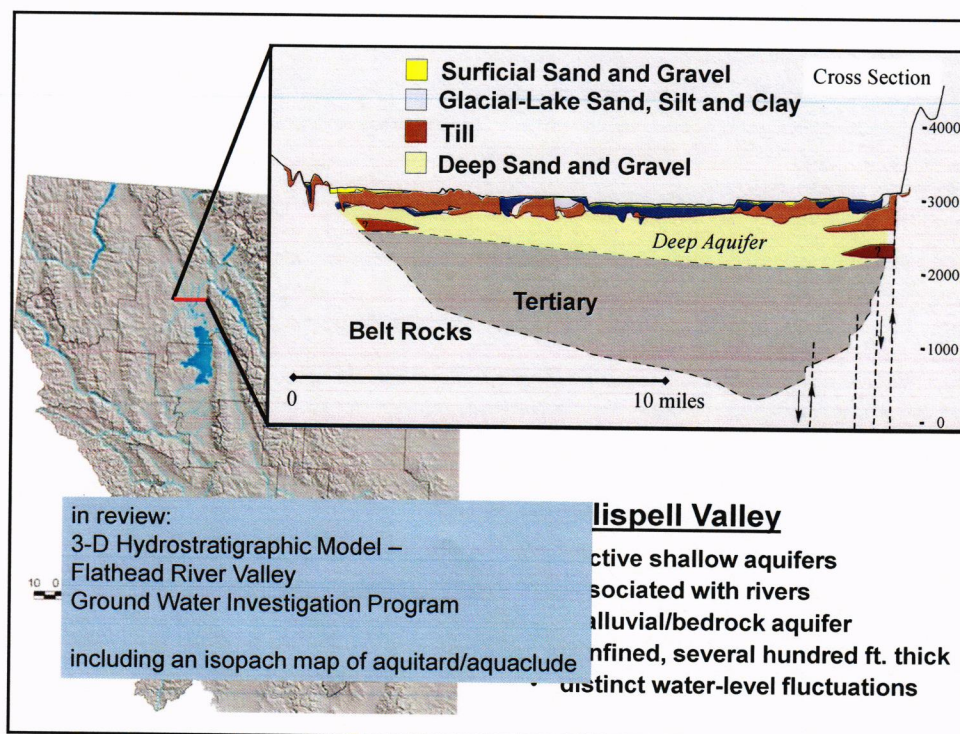
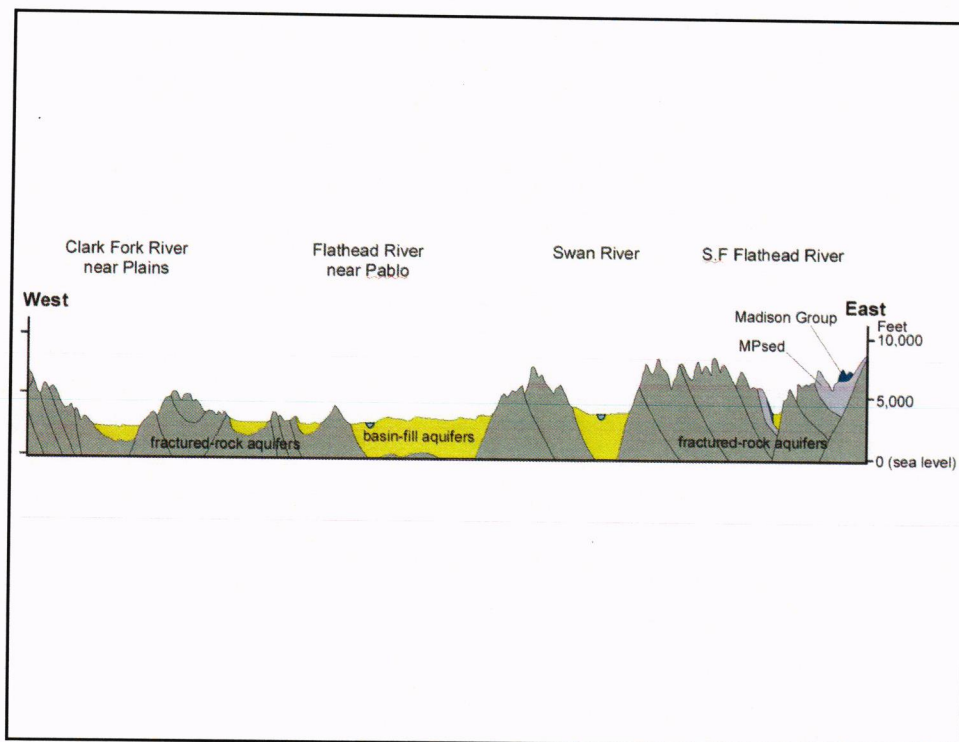


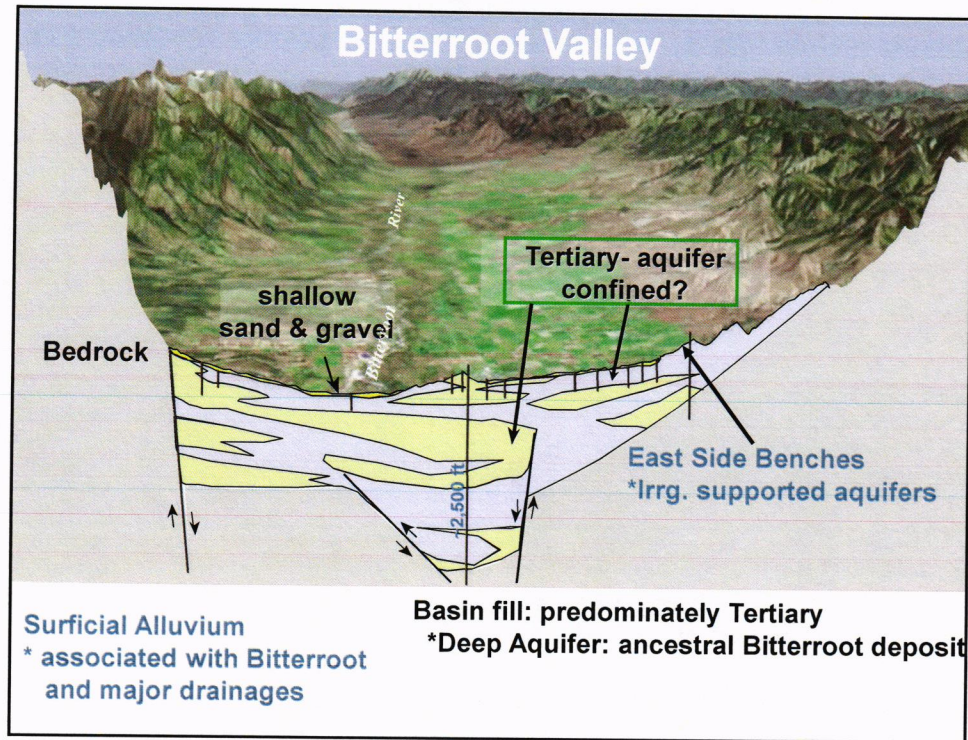


Kootenai and Madison Formations





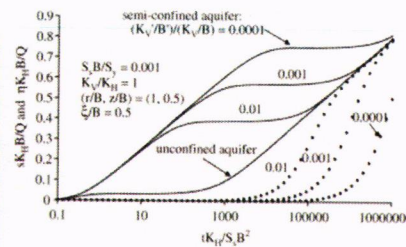




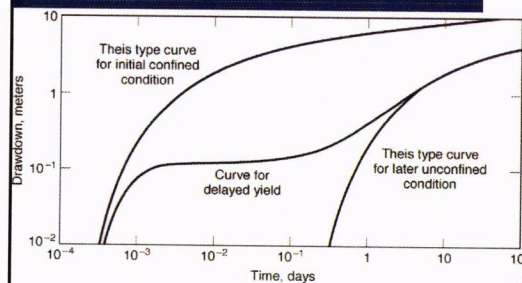
More than mapping...

Methods Available- Aquifer Tests

- Slichter(1906)
- Muskat (1937)
- Hvorslev (1951)
- Raju & Raghava Rao (1967)
- Papadopulos – Cooper (1967)
- Adyalkar & Mani (1972)
- Kumara swamy (1973)
- Zdankus (1974)
- Boulton & Streltsova (1976)



The difference is seen in well response...



Methods Available- Aquifer Tests

- Herbert – Kitching (1981)
- Rushton and Holt (1981)
- Rushton and Singh (1983)
- Singh & Gupta (1986)
- Roushton & Singh (1987)
- Artificial Neural Networks

Summary

	unconfined	confined
cone of depression	100s feet	100s miles+ Fox Hill aquifer pressure loss from flowing wells – multiple counties
vulnerability	throughout	recharge area only(?) poor completion of wells can connect aquifers
aquifer properties (T,S,b)	variable, hard to map	simpler
interaction w/ surface water	likely	recharge area only
over development	lower w.t., stream depletion	loss of pressure head risk of becoming unconfined
injection response	same as pumping	same as pumping
chemistry	reflects local flow paths	reflects regional flow paths